

EDUCATIONAL TECHNOLOGY NEWS

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WELCOME

Welcome to the seventh edition of *Educational Technology News*. We are very pleased to continue to share the recent developments of our work in educational technology, as well as to announce our new resources and upcoming events. In this issue, we explore the latest Center for Technology research and development efforts, including our first international webcast on the future of the National Educational Technology Standards (NETS) and our newly completed case studies and cross-case analysis of high-performing, high-poverty and/or high-minority, high-technology schools. Following these in-depth articles, announcements of a new e-learning report covering K-12 online learning policy and practice and the next National Educational Technology Conference are included.

Thank you again for your continued interest in our work. We invite you to learn more about these and other Center for Technology research and resources by visiting our home page at www.ncrel.org/tech/. For more information about Learning Point Associates, please visit www.learningpt.org.

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Educational Technology News is a biannual newsletter published by the Center for Technology at the North Central Regional Educational Laboratory (NCREL), a wholly owned subsidiary of Learning Point Associates. As one of 10 regional educational laboratories funded by the U.S. Department of Education, NCREL is a leading research laboratory with a designated National Leadership Area in educational technology. In partnership with the North Central Eisenhower Mathematics and Science Consortium (NCEMSC) and the North Central Regional Technology in Education Consortium (NCRTEC), we continue to enable teachers, administrators, and policymakers to integrate technology effectively.

Live Expert Webcast Projects Future of ISTE's NETS

By Nicole Gallmann, Learning Point Associates

Learning Point Associates and the International Society for Technology in Education (ISTE) partnered on July 30, 2004, to offer an interactive webcast on the future of the ISTE National Educational Technology Standards (NETS) for students, teachers, and administrators. The webcast, moderated by Cathy Gunn, Ph.D., executive director of the North Central Regional Educational Laboratory (NCREL), included expert panelists:

- Gary Bitter, Ph.D., Arizona State University and executive director of Technology Based Learning & Research
- Jim Bosco, Ed.D., Western Michigan University
- Leslie Conery, Ph.D., deputy chief executive officer for ISTE
- Lajeane Thomas, Ed.D., project director for the ISTE NETS projects

During the hourlong webcast, panelists discussed the current state of the NETS and educational technology and addressed questions from the real-time international online viewing audience. In particular, the expert discussion focused on four main discussion points: (1) impact of the NETS on the educational technology field, (2) assessment of technology literacy, (3) professional development through successful technology integration, and (4) relevance of ISTE's NETS.

• **Impact of the NETS.** Panelists agreed that the impact of the NETS has exceeded what the original designers expected. The depth and breadth of use and application of the NETS now reaches an international audience. Globally, educators and administrators are asking about the process involved in creating the NETS for use in classrooms across the world. The panelists pointed out that although the standards were originally intended for use in the United States, the standards are proving much more far-reaching in their international adaptation and implementation.

• **Assessment of Technology Literacy.** Panelists outlined assessment as the next development in the field of educational technology. Currently, tech-

nology literacy assessment in the classroom depends on student standards with assessments created by the teacher. With few formal assessments available, ISTE is exploring partnerships for the creation of such assessment resources. Learning Point Associates also is developing rubrics to assist state and school-district leaders in their efforts to measure and monitor the development of student technology literacy throughout the elementary and secondary grades. View a draft of our rubrics and provide feedback online through January 2005 by visiting www.ncrel.org/tech/nets/rubrics.htm.

• **Professional Development Through Successful Technology Integration.** Panelists pointed out that on-site professional development with a school's own hardware, perhaps even just-in-time professional development (learning skills for immediate use), is the direction to go to make real progress with supporting a teacher's use and integration of educational technology. Ultimately, through community and policy support, the goals of professional development ought to work toward providing opportunities for technology use that is meaningful to educators and, through them, the students as well.

• **Relevance of ISTE's NETS.** Panelists asserted that although the NETS for students were developed in 1998, the standards themselves have managed not to become outdated. What must be continually updated, however, are the materials that support them because they are tied to ever-evolving technology tools.

While each panelist offered his or her insights on the future of the ISTE NETS and the changing face of educational technology, the panelists also pointed out that continuous feedback is needed from educators and administrators in order to avoid mere speculation on what the future holds for the ISTE National Educational Technology Standards and the implications for students, teachers, and administrators.

To recommend topics for future webcasts or, for a limited time, to view the NETS webcast, please visit www.ncrel.org/tech/nets/webcast.htm.

NCREL Conducts Case Studies of Schools That Have Used Technology as a Tool to Help Close Achievement Gaps

New in the
Center for Technology

By Sue Rasher, OER Associates; James Sweet, Learning Point Associates;
Barbara Abromitis, OER Associates; and Elizabeth Johnson, OER Associates

The North Central Regional Educational Laboratory (NCREL), a wholly owned subsidiary of Learning Point Associates, recently conducted extensive case studies of 20 high-performing, high-technology schools with majority low-income, African-American, or Hispanic student populations. The purpose of NCREL's case studies was to discover how administrators, teachers, and students in these schools use technology and to what extent educators believe technology contributes to the academic performance of their students.

We selected a purposive sample of schools based on previous work by the Education Trust (Jerald, 2001) by establishing two additional criteria. First, we selected only schools that ranked among the top third of all schools in their states on both reading and mathematics assessments in at least one grade. Second, we selected only schools in which principals reported frequent technology use by teachers and students. For more information on the selection of these schools, see Volume 2, Issue 2, of *Educational Technology News* at www.ncrel.org/tech/etnews/EdTechNews22.pdf.

The purposive sample of case study schools is balanced with respect to geography, income, ethnicity, and school type. Twelve of the case study schools are located in the North Central region, and eight are located in California, Florida, and Texas. Eight case study schools are located in rural areas, five are located in medium cities, and seven are located in large cities. Seven of the 20 cases have a majority low-income student population, and six cases have a majority African-American or Hispanic student population. In seven cases, a majority of students are both low-income and African-American or Hispanic. Twelve cases are elementary schools, two cases are middle schools, and six cases are high schools. Five cases are magnet schools, including two magnet elementary schools and three magnet high schools.

An analysis of data collected from teacher and administrator surveys and interviews, classroom observations, and school and district documents resulted in

a case report for each school. One member of the research team who had not participated in site visits and one member who had visited case study schools then conducted a content analysis of these case reports. This cross-case analysis found that educators in the high-performing, high-technology schools generally did not directly attribute the academic success of their students to administrator, teacher, or student technology use. Rather, they attributed academic performance to six characteristics that were present in each of the schools:

1. A positive and cohesive learning environment
2. A coherent approach to curriculum, instruction, and assessment
3. A professional community of teachers
4. Effective school leadership
5. Emphasis on school improvement and student achievement
6. Active parent and community involvement

These characteristics are similar to those that have been found in other studies of school effectiveness (Marzano, 2003; Teddlie & Reynolds, 1999; Teddlie & Stringfield, 1993; Wenzel et al., 2001) that did not specifically address educational technology. What makes these schools high-technology as well as high-performing is that administrators, teachers, and students use technology in ways that contribute to creating and maintaining each of these characteristics of effective schools in a significant way.

1. A Positive and Cohesive Learning Environment

Teachers and administrators at each of the participating schools often indicated that their school was a special place to be and that the school's overall environment contributed to student learning and achievement. Survey and interview respondents mentioned the physical surroundings and facilities, teacher and student attitudes, and unique programs

as being central to their school's success. All of the schools have computers in their classrooms, and almost all have at least one computer laboratory. The use of available technology is a part of the learning environment in that it provides the means for students to achieve to their highest level, or it is used by teachers as one of many resources for instruction or by students to demonstrate what they have learned.

2. A Coherent Approach to Curriculum, Instruction, and Assessment

The content of the curriculum, the instructional approaches and methods employed by the teachers, and the ways in which student learning is assessed are critical elements of the learning experiences provided at each school. Survey and interview respondents often mentioned the ways in which teachers meet individual student needs, specific instructional emphases, the alignment of curriculum with state standards, and the use of technology for instructional purposes as being significant contributors to student achievement. All but two of the schools place a strong and consistent instructional emphasis on either basic skills or higher-order thinking, with only one school emphasizing each equally.

In general, the schools that have a stronger skills emphasis reported more traditional means of content delivery and used technology primarily for:

- Standardized test practice
- Skills remediation or mastery
- Writing
- Research

In general, the schools that had an emphasis on higher-order thinking used a wider variety of instructional activity structures and had students use technology for higher-level thinking processes, such as analysis, exploration, organization, and problem solving. There were some surprising exceptions to this generalization, however. For example, a greater proportion of schools emphasizing higher-order thinking assigned students to use technology for test practice than did schools emphasizing basic skills.

3. A Professional Community of Teachers

Teachers in the high-performing, high-technology schools recognize their own professionalism as a significant contribution to their students' learning. The professional community of teachers includes such elements as their caring for students and a sense of

responsibility for student learning, competence and autonomy, experience, teamwork and collaboration, professional development, and commitment to the use of technology. Teachers value the professional development they receive in technology, knowing in many instances that their students may be more knowledgeable than they are with computers. Also, in order to adequately prepare their students for the future, teachers need to enhance their technology skills as well. The teachers in this study use technology as a tool to make their professional practices more efficient and effective, most commonly to locate and prepare instructional resources, present information to students, and communicate with parents and other educators. Although there are significant differences across schools in the ways students use technology, teachers generally use technology for very similar purposes.

4. Effective School Leadership

Teachers at each of the schools often mentioned the importance of school leadership as a strong contributor to student achievement and their ability to teach effectively. Indicators of effective school leadership included specific support for the teachers, close monitoring of student achievement, and creating a shared vision for school improvement and technology use. As a part of the study, administrators also were asked to discuss the priorities they had for the school and for technology use, as well as to describe the ways in which they use technology to improve their administrative practice; the discussion of this characteristic includes these elements. Administrators in this study set their priorities for technology use based on what would be best for student learning and for the development of teacher expertise, and they themselves used technology most frequently to streamline their daily tasks and to improve the efficiency and effectiveness of their own professional practices.

5. Emphasis on School Improvement and Student Achievement

Across the high-performing, high-technology schools, the emphasis on technology has shifted substantially from "boxes and wires" to using technology as a tool for school improvement and student achievement. Almost all of the schools use data to identify achievement gaps, often at the level of individual students, or to improve curriculum and instruction. The use of technology to analyze data for these purposes is consistent with administrators' priorities for technology use as well as the professional use of technology to improve both administrative and teaching practice. However, about one half of the schools continue to

struggle to some extent with inadequate funding for technology, inadequate technology resources, and inadequate support for technology. On the other hand, very few of the schools have problems with malfunctioning technology or facilities that do not accommodate technology. All of the schools cited some funding source, most commonly grants and the E-Rate, as an important factor that has promoted technology use.

6. Active Parent and Community Involvement

Although these case studies were not instrumented specifically to collect data about parents and the community, their active involvement in many of these high-performing, high-technology schools emerged in interviews with administrators and teachers. Survey and interview respondents cited the following as examples of active parent and community involvement:

- Parent and community fundraising and other material or financial support
- Classroom and school volunteers
- Collaborative partnerships with businesses or other community organizations
- Schools providing services, information, and classes to parents and the community

In this apparent appreciation of mutual support for the benefit of the children from both the school and the families and community, these schools are set apart. In some cases, educators perceived a unique relationship between the school and the community. In the most extreme cases, these relationships seemed to be forged by geographic or economic isolation. In these cases, educators often believed that technology was a powerful tool to overcome this isolation and provide students with opportunities

they otherwise would not be afforded in these communities. In these cases, educators often indicated that parents shared this view and were strong advocates for technology in their school.

Conclusion

The No Child Left Behind (NCLB) Act of 2001 established improved student achievement as the first priority for the use of educational technology. NCREL's case studies suggest that educational technology, regardless of whether it has a direct effect on student achievement, can help create and maintain six characteristics of effective schools that educators believe contribute to academic success. At the case study schools, educators use technology as a tool to promote each of these characteristics but do not regard technology as sufficient in itself to ensure academic success. As a result, the case studies suggest that research on educational technology should be embedded within studies of teacher and school effectiveness more generally.

Differences in how the six characteristics of effectiveness are manifested in the case study schools appear to be related primarily to differences in how students use technology, whereas administrator and teacher technology use appears to be more consistent across the schools. However, students in the case study schools appear to use technology in a variety of ways that are broadly consistent with the direction of the NCLB Act, from diagnostic assessment to skills development to higher-order thinking.

Look for more information on the similarities and differences among the case study schools, as well as examples of how administrators, teachers, and students use technology in these schools, on NCREL's *Technology in Education* Web site (www.ncrel.org/tech/) throughout 2005.

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New Publication and Conference Highlight Technology Work

In the Spotlight

By Nicole Gallmann, Learning Point Associates

Now Is the Time for Keeping Pace With K-12 Online Learning

NCREL, in partnership with the Colorado Department of Education, Illinois Virtual High School, and Wisconsin Virtual School, recently directed and funded a national study to ascertain what states are doing to address the need for policy guidance in K-12 online education. The extensive report, *Keeping Pace With K-12 Online Learning: A Snapshot of State-Level Policy and Practice*, is based on research conducted through telephone interviews, literature reviews, and Internet searches. It provides educators with information on specific topics in K-12 online learning practice, as well as analysis and discussion of online learning policy issues with recommendations for state policymakers. **The report is available online at www.ncrel.org/tech/pace/index.html.**

Preparations Underway for 2005 National Educational Technology Conference

Plan to attend the 2005 National Educational Technology Conference, convened during NCREL's sixth Annual Conference, March 9-10, 2005, in the Chicagoland area. The theme of this conference is "Reaching High Expectations: Research, Resources, and Strategies for Excellence in Teaching and Learning." Interactive presentations will cover research and effective solutions for the challenges that educators, administrators, policymakers, and researchers encounter in their day-to-day roles in classrooms and districts across the nation. These technology sessions will generate thought-provoking discussions on innovation in technology and education. See you this March! **For content and registration information, please visit www.ncrel.org/meeting/ after January 1, 2005.**

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Available online at www.ncrel.org/tech/etnews/

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Learning Point Associates was founded as the North Central Regional Educational Laboratory (NCREL) in 1984. NCREL continues its research and development work as a wholly owned subsidiary of Learning Point Associates.

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